

Lunar Oxygen and Silicon Beneficiation Using Only Solar Power, Phase II

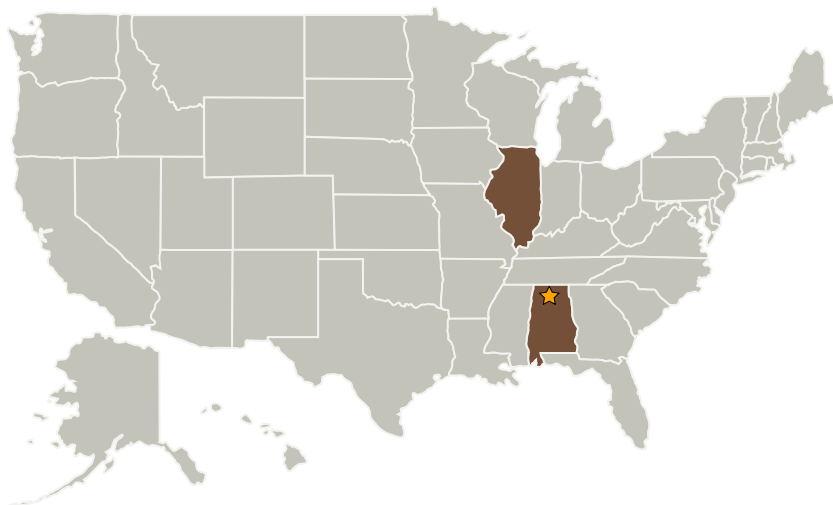
Completed Technology Project (2009 - 2011)



Project Introduction

The Phase I effort conceived a novel method for ISRU oxygen extraction and liquefaction from lunar regolith, representing a significant advance in the state of the art. The approach uses solar photovoltaics as a power source to heat and extract oxygen with highly favorable system metrics, capable of achieving TRL 3 during a Phase II effort and TRL 6 in earth gravity during Phase III. Autonomy of operation is straightforward with simple robotics. Annual oxygen output is calculated to be many times the system mass. Projections of engineering development indicate the potential to be flight-ready for lunar operations by the time a lunar outpost is established, followed by commercial lunar operations.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Marshall Space Flight Center (MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Packer Engineering	Supporting Organization	Industry	Naperville, Illinois



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Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Organizational Responsibility	1
Project Transitions	2
Project Management	2
Technology Areas	2

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

Alabama

Illinois

Project Transitions



September 2009: Project Start



September 2011: Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX07 Exploration Destination Systems
 - └ TX07.1 In-Situ Resource Utilization
 - └ TX07.1.2 Resource Acquisition, Isolation, and Preparation